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ABSTRACT

This paper reports on an independent review of two examinations designed to assess teacher competencies: the Praxis Series and the Content Mastery Examinations for Educators (CMEE). The review was ordered by the Montana Department of Public Education in order to decide which battery of tests would replace the National Teacher Examination (NTE). The paper, which is a point-by-point examination of the Prasix Series and the CMEE, covers: (1) a general description of each examination; (2) test content; (3) accommodation for people with disabilities; (4) development; (5) technical and psychometric aspects (validity, bias, reliability, and score reporting); (6) strengths and weaknesses; and (7) a discussion of each test series. The paper concludes with a general discussion on the role of assessment of knowledge and skills in various professions. Findings of the study indicate that the CMEE and the Praxis Series are both appropriate assessment batteries; both have been developed and studied to assure validity and reliability. However, during the study, while technical assistance was readily available from the National Computer System staff regarding CMEE, getting information on the Praxis Series from Educational Testing Service was more cumbersome. The study concludes that assessment of knowledge of candidates for teaching certificates must serve the state (representing the children) and the teaching profession by assisting to certify only qualified candidates. The process should be kept simple and efficient for candidates, assessing the areas the state and profession deem necessary, and variables such as score reporting, cost, and accessibility ought to be considered when making decisions on assessment instruments. (ND)

ED 390 807

"With the phasing out of the NTE, do either the Content Mastery Examinations for Educators (CMEE) or the Praxis Series meet the requirements of a competency-based assessment for beginning teachers in Montana?"

A Report to

The Board of Public Education

State of Montana

Dr. Ernest Rose, Interim Dean

College of Education and Human Services

Montana State University - Billings

July 21, 1994

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Question Posed:

With the phasing out of the NTE, do either the CMEE or the Praxis Series meet the requirements of a competency-based assessment for beginning teachers in Montana?

How the Question was answered:

Reviews were made of each test, comparing the following aspects : general description, test content, accommodations for individuals with disabilities, description of test development, technical and psychometric aspects, strengths and weaknesses.

Introduction

In the Spring of 1994, The Board of Public Education in the State of Montana requested independent reviews of two examinations designed to assess teacher competencies. These were the **Praxis Series**, developed by Educational Testing Service, and the **Content Mastery Examinations for Educators** (CMEE), developed by IOX Assessment Associates for National Computer Systems (NCS). It was determined that one of these battery of exams would replace the current assessment devise, the National Teacher Examination (NTE), because it was being phased out by Educational Testing Service. The following is a point by point comparison of the two examinations.

Content Mastery Examinations for Educators

1. General Description

The Content Mastery Examinations for Educators (CMEE) is a criterion referenced test developed to evaluate beginning teachers. It has 24 separate tests of content and basic skills. The Basic Skills Test is intended to be used by institutions and state departments to assess students of teacher training programs as well as beginning teachers. The Basic Skills Test assesses writing, reading and mathematics skills. There is also a Pedagogy exam, which assesses knowledge of educational concepts and methods.

The CMEE also has 22 content area exams, including Art Education, Biology, Business Education, Chemistry, Early Elementary Education, Earth and Space Science, Elementary Education, English, French, Health Education, Home Economics, Mathematics, Music, Physical Education, Physics, Reading Specialists, Social Studies, Spanish, and Special Education. It also includes tests for Administration and Supervision, School Library Media Specialist, and Guidance and Counseling.

National Computer Systems (NCS) allows states to set dates for the exam, and the number of tests it wishes to offer per year. They also allow states to determine the amount of time that is allocated to complete the exam. States may also contribute to decisions such as how special accommodations can be granted to individuals with disabilities and in other special situations.

A suggested examination configuration (provided by NCS) for a person certifying for Elementary and Special Education may be:

- The **Basic Skills Test** for either entrance to or exit from a Teacher Education Program
- The **Elementary Education** content area exam to assess specific skills and competencies in Elementary Education
- The **Special Education** content area exam to assess specific skills and competencies in Special Education
- The **Pedagogy** exam to assess teaching methods, classroom management, human development and other pedagogical content
- The total cost of this battery would be $200.00. Cost of the exam is $50.00 per test.

2. Test Content

The content is reported to be representative of the knowledge base that is necessary to be a successful beginning teacher. Several panels of experts, teachers and teacher educators, were surveyed as to the appropriateness of content outlines during the development of the instrument. Questions are presented in an educational context in order to be relevant to the test taker.

The CMEE utilizes several techniques to evaluate skills and abilities. These include: a writing sample in The Basic Skills Test, a video taped section in The Pedagogy Test, which shows classroom situations; a listening and speaking portion in the French and Spanish tests; and the use of calculators in the mathematics, physics, and chemistry tests.

The video taped section of The Pedagogy Test is an optional portion of the exam, which presents several three minute vignettes of classroom instruction at several different grade levels and content areas. Candidates are given multiple choice questions on topics such as classroom management, instructional methods, and the like.

NCS is willing to work with state departments to develop individualized, open ended and/or short answer questions for any of the exams in order to meet the specific testing needs of the state.

3. Accommodations for People with Disabilities

Every attempt to remain within legal parameters are made, and accommodations are allowed for anyone facing physical or cognitive challenges with the proper documentation. Accommodations are routinely made by utilizing large print tests, readers or Braille formats for persons with visual impairments, interpreters for individuals with hearing impairments, extended time, separate testing rooms, and front of the room seating. Information regarding accommodations is available to candidates in the registration bulletin.

4. Development

The CMEE tests began as content specific outlines. These outlines were developed by examining content areas and what was believed to be important knowledge for beginning teachers. These outlines guided the development of questions, as well as the validation studies.

National Computer Systems (NCS), the developers, utilized experienced teachers in the development and determination of appropriateness of the content outlines, based upon what they considered to be adequate performance by beginning teachers. To develop test questions, NCS did the following:

a. Content Identification Triads: Content identification using triads consisting of teacher educators experienced teachers and staff from IOX Assessment Associates.

b. Content Determination Panels: Outlines were defined by panels consisting of teachers, administrators, and state department officials.

c. Item Generation: Test items were created according to refined outlines.

d. National Content Review: Over 360 educators reviewed items for quality.

e. National Bias Review: African American, Asian American and Hispanic American reviewers examined items for unfair or offensive content.

f. Field Test of Items: Tests were administered in teacher education programs.

g. Technical Review of Items: Field test data were reviewed by experts and items were selected for actual forms.

h. Creation of Multiple Test Forms: Parallel forms were developed.

Appropriate cutoff scores have been established by the panels involved with the content review based on what was felt to be the minimum knowledge necessary to be a successful beginning teacher. However, states may establish their own cutoff scores. Cutoff scores for The Basic Skills Test has been determined to be 78.8 percent correct on the exam, and 75.3 percent on The Pedagogy Test.

5. Technical and Psychometric Aspects

Validity

A great deal of time and effort was spent on insuring validity of the CMEE. The following are primary considerations that IOX used in developing the exam:

- Goals: to measure appropriate content and to limit bias.

- Five geographic regions: East Coast, South, Midwest, Pacific Northwest, and the Far West.

- Defined content validity as "the degree to which the sample items, tasks, or questions on a test are representative of some defined universe or domain of content" (p. 26) as defined by Standards of Educational and Psychometric Testing (1985).

- Focused on job-related questions.

- NCS maintains that because of its high content validity, no local validity testing is really necessary.

Content validity was established via opinions of educators and teacher education specialists. A statistical analysis was performed on each test to determine internal consistency, to establish content validity, and to determine bias using mean per item indices and point biserial coefficients for each section of each test. Each item of each section was rated by a panel of experts and the analysis was conducted on their ratings. Coefficients for The Basic Skills Test were .933 for content and .973 for bias-fairness on Form A and .939 for content and .977 for bias-fairness on Form B.

Bias

- The Bias Review Panels were composed of African American, Asian American and Hispanic American educators and assessment experts.

- Questions asked of panelists:

"Might this item offend or unfairly penalize any group of candidates on the basis of personal characteristics such as gender, ethnicity, religion, or socioeconomic status?" (p. 31, Development and National Validation Process).

"Considering the entire set of test items that you have just reviewed, do the items, taken as a whole offend or unfairly penalize any group of candidates on the basis of personal characteristics such as gender, ethnicity, religion or socioeconomic status?" (p. 33, Development and National Validation Process).

- Native Americans were included in the bias review process, but not reported as part of the review sample.

- NCS considers the CMEE to be bias free.

Reliability

Reliability is reported to be slightly different for each state, depending upon the state's cutoff scores. Coefficients were .92 for the pilot and .91 for all other testing. Total test reliability is around .92.

Score Reporting

Score reporting comes in two forms: The Individual Profile, which is sent directly to the candidate, and the State Summary Report which is sent to Institutions and State Departments for official recording of scores.

The Individual Profile has the following features:
- Personal Information that the candidate can review for accuracy.

- Total Test Results, giving the individual's score, the state cutoff score, and a pass/fail indicator.

- Content Outline Results (for those taking the content area exams), showing the candidate specific content areas that require additional study.

- For The Basic Skills Test an individual's performance levels are revealed relative to other candidates. These indices indicate whether scores fell below, the same as, or above the standard. Candidates can readily determine the areas that need further study in order to pass the exam.

- Customized comments for each individual.

The State Summary Report has three portions, including content outline results for all candidates and two alphabetized rosters.

- The Content Outline Report shows an institution the number of candidates taking the exam, and the number and percentage of those passing and failing.

- The Alphabetized Rosters include names of candidates, the test(s) taken, the scaled scores, and an indication of those failing. It also provides a separate report that outlines where each candidate needs additional study.

6. Strengths and Weaknesses

Strengths

- Extensive Validity Studies
- High reliability
- Easily understood score reporting
- Willingness of NCS to assist states to set up and administer tests.

Weaknesses

- No data reporting how minority groups perform on the tests.

Discussion on the CMEE

CMEE is a valid and reliable criterion-referenced test that will indicate to an appropriate degree, which candidates possess the knowledge that expert opinion has indicated necessary for beginning teachers. NCS appears to be sensitive and responsive to state needs for teacher testing and appropriate outcomes.

One of the goals of NCS regarding the CMEE is that it will serve to improve teacher education. By reviewing areas recommended for further study, institutions can review their students' performance in specific content. This can lead to improvement of instruction. This is an admirable goal, but may potentially lead colleges to "teach to the test". NCS may respond by saying that this may be appropriate, since CMEE was developed with the assistance of top experts in the field of education and teacher education. The question must be asked, do individual states and their teacher education programs set the standards or does a teacher evaluation instrument?

In regard to NCS's claim that the CMEE is bias-free, the following should be considered:

1. Regardless of bias review by panels of members of minority groups, the definition of bias is still subjective and it is a stretch to claim that any assessment instrument of this nature is bias-free.

2. The Bias Review Panels did not include Native American representation, nor are there adequate data on Native American performance.

To adequately address bias in Montana, a study should to be conducted with the Native American students in this state.

The Praxis Series

1. General Description

The Praxis Series: Professional Assessments for Beginning Teachers is intended to evaluate both teachers-in-preparation and beginning teachers in information and skills associated with teaching. The Praxis series consists of three assessment components and an instructional program. Praxis I: Academic Skills Assessments is intended to measure proficiency in the foundation skills of reading, writing and mathematics. These tests are designed to be taken during an individual's college career, with the purpose of determining that prospective teachers have established basic enabling skills. Praxis II: Subject Assessments is designed to measure knowledge in specific teaching content areas. Praxis III: Classroom Performance Assessments aims to measure classroom performance of new teachers. The first two elements consist of paper and pencil exams (or a computer based alternative for Praxis I). The third is a structured observation of actual teaching conducted in conjunction with an interview of the teacher. Learning Plus is ETS's computer-based instructional program for adult learners who need help with basic reading, writing, and mathematics skills. The remainder of this report focuses on Praxis I and Praxis II - the elements of the Praxis Series which address information related to initial entry into the teaching profession.

Praxis I is offered in two formats. The Computer-Based Academic Skills Assessment requires a DOS system and can be used in single self-standing, multiple self-standing, or networked configurations. The computer-based format incorporates a range of question types including multiple response, highlighting, fill-ins, reordering, and candidate-constructed responses. The claim is made that the computer-based format tailors tests to suit individual candidate's performance insofar as "right" answers trigger more difficult questions and "wrong" answers trigger easier questions, with the purpose of accurately pinpointing skill levels. The computer-based exam can be taken at any time of the year and lends itself to individual or group administration. A more conventional paper-and-pencil format, Pre-Professional Skills Tests is also available. In this exam, multiple-choice questions are based on reading passages and statements and having the examinee choose the most appropriate response among those provided. Both assessment formats also include the opportunity for candidates to construct an essay. The paper-and-pencil format is scheduled eight times a year and lends itself to group administration.

LearningPlus is a tutorial tool for Praxis I. Through a series of diagnostic and placement tests, an individual candidate's strengths and weaknesses in basic academic skill areas are assessed. Based upon the results of these assessments instruction in reading, writing, and/or mathematics can be structured and offered in a self-paced computer-based format.

Praxis II is a paper-and-pencil assessment of content area information assumed to be necessary for the teaching of particular subject areas. These

assessments are reported to measure subject matter knowledge and knowledge about teaching that subject. Over 70 different exams are offered, ranging from Art Education to World Civilization. A feature of note is that there are 11 different content area tests related to the education of students with disabilities. Topics range from "Special Education" to "Special Education: Preschool/Early Childhood" and include tests specific to teaching individuals with particular types of disabilities. Each Praxis II Subject Assessment offers a multiple-choice core test and one or more candidate-constructed response modules. These exams are also offered up to eight times a year.

The various elements in the Praxis Series are priced separately. There is a $20 registration fee which is assessed for taking one or more exams in a single day. Costs range from $40 for a single Praxis I preprofessional test in paper and pencil format to $105 for three tests in the Praxis I computer-based academic assessment. Individual Praxis II subject matter module assessments cost $55 for one-hour exams and $70 for two-hour long core exams.

A configuration similar to the CMEE would be possible for a person certifying for Elementary and Special Education:

- **Praxis I** $40.00
- **Praxis II: Elementary** content (one hour $55.00, two hour $70.00)
  Special Education content ($55.00 or $70.00)
- **Registration Fee** $20.00 per test session

- Since Praxis I and Praxis II are offered on two separate dates, minimum registration fees would be $40.00.

- Total fees for this battery would be $190.00 to $220.00.

2. Test Content

Praxis I tests skills in reading, writing, and mathematics which are assumed to be required of all teachers, regardless of the subject matter or grade levels being taught.

Praxis II purports to measure candidates' knowledge of the subjects they will teach. More than 70 subjects are covered. In addition, ETS offers states the opportunity to customize subject exams through a modularization process. For example, it is possible to combine a two-hour multiple choice subject core with one or more optional modules which focus on particular aspects of the subject or on ways to teach the subject which rely on candidate-constructed responses.

3. Accommodations for Persons with Disabilities

With its flexible scheduling and computer delivery approach, the computer-based format available for Praxis I potentially offers opportunities for

creative accommodations for persons with disabilities. Special arrangements for accommodations can be made for other Praxis tests. Advanced notice of need for accommodations would be required to put those accommodations in place. Part of the burden for accommodations falls upon the test administrator or test administration center.

4. Development

In its development of the Praxis Series, ETS has followed technical standards for educational and psychological testing as established by the American Educational Research Association, the American Psychological Association and the National Council on Measurement and Evaluation. According to ETS literature, as part of the development efforts, ETS reviewed current methods used in teacher evaluation; developed and conducted job analyses of teaching to determine what knowledge, skills, and tasks are required at each stage of the beginning teacher's career; and examined state teacher licensing requirements. Approximately 3,000 teachers and other educational experts were consulted at various stages of the planning and development stages in the process in which they engaged. Many of th ese individuals were involved in initial job analyses in which opinions were gathered in regard to job-related knowledge and skills.

To develop test questions, ETS did the following:

a. Reviewed state licensing requirements

b. Performed job analyses to determine important knowledge and skills for beginning teachers

c. Test specifications were developed by panels of experts

d. Test items were developed

e. Items were validated by panels of experts

f. The test was constructed

g. Standards were set

h. Tests were administered in several states

i. Results were reviewed by states and institutions

5. Technical and Psychometric Aspects

Validity

According to ETS, "these assessments are used *as part* (emphasis is mine) of the qualifying process for state license and entrance into teacher education." National validation is offered for Praxis I and multi-state

validation is offered for Praxis II (It has been pretested in 37 states and the Virgin Islands). Each state needs to establish validity when piloting the test.

Bias

It appears the efforts have been made throughout the development process to pay attention to the multicultural aspects of classrooms in which teachers teach. However, evidence is sparse in regard to specific efforts to attend to the issues of candidates from diverse cultural backgrounds who will be taking the Praxis exams. ETS did make use of a "Fairness Review Panel" to make judgments regarding the questions which were included in Praxis I. Acknowledgment is made that "judgments of fairness remain highly subjective." The panel consisted of three individuals from Hispanic, Asian-American and African-American ethnic backgrounds. In addition, several of the assessments in Praxis II have been reviewed by additional consultants for fairness.

Reliability

- Reliability for Praxis I ranges between .85 - .89.

- Reliability for Praxis II content areas vary. For example, based on an N of 11,000 the reliability estimate for elementary education (general) is .91 with a standard error of measurement of 4.8. For Special Education (general) the reliability is .92 with a standard error of 5.1 based on an N of 1,100.

Score Reporting

The computer-based academic skills assessment offers "unofficial" scores immediately upon completion of the exams for reading and mathematics. Official scores on these and other exams are mailed to candidates and specified score recipients within several weeks of test administration. Both individual scores and composite institutional scores are available.

6. Strengths and Weaknesses

Strengths

- The Praxis Series offers flexibility to individual states, insofar as a "battery" could be specified that reflects a state's specific licensing requirements.

- A wide range of subject matter tests are available, including 11 in the education of students with disabilities.

- The Listening Comprehension portion of the NTE is no longer included in the assessment process.

Weaknesses

- Minority groups appear to be under-represented in validation studies. Of specific interest to the state of Montana is the fact that Native Americans are not reported as part of test development efforts.

- Score reporting is not particularly user friendly for individuals who took the test; neither is it for teacher education institutions and state departments.

Discussion of the Praxis Series

The Praxis Series consists of valid and reliable tests constructed from job analyses that indicate, to an appropriate degree, which candidates possess the knowledge that expert opinion has indicated necessary for beginning teachers. States can make choices as to which portions of the series are appropriate, and ETS claims they will assist states to establish a battery of tests to meet their assessment requirements.

Praxis I covers basic skills in mathematics, reading and writing, while Praxis II assesses 70 separate content areas. Praxis III assesses teachers on the job. Careful guidelines and training for assessors are provided to assure fairness and consistency for those assessments.

General Discussion

There are numerous professions that require assessment of knowledge and skills prior to entrance and acceptance into that profession. They are part of society's expectation of the profession, as well as the profession itself. In some respects, the assessment procedure may be considered a privilege in which an individual is permitted to participate, or a rite of passage into the profession. Accountants, physicians, attorneys, counselors, and nurses are but a few of the numerous professions that require an assessment of skills and knowledge before allowing professional practice. These assessment tools serve to protect the public and the profession by determining basic and agreed upon domains of knowledge widely accepted by the professions that utilize them. It is therefore justifiable that teacher testing be an established point of entry to that profession as well.

The CMEE and the Praxis Series are both appropriate assessment batteries. Both have been developed and studied to assure validity and reliability. Both relied on the Standards of Educational and Psychometric Testing during development and validation. However, a couple of words regarding technical assistance seem to be in order. During the development of this report, the National Computer Systems staff were readily available to answer questions, send information and explain the process of development, validation and procedures regarding the CMEE. On the other hand, ETS was more of a challenge. It took two weeks to obtain reliability and validity coefficients, which should be readily available to inquirers. Access to information on validity and reliability seemed to be dependent on

amount of bureaucratic-type transfer and run around before that individual was found. This inconvenience could be avoided if the information was included in the promotional materials and test manuals. The point is not to suggest that the decision to contract with one company over the other should be based on this individual's experience, but to emphasize that accessibly to information and technical assistance is an important issue to consumers, in general.

An assessment of the knowledge of candidates for teaching certificates must serve the state (representing the children) and the teaching profession by assisting to certify only qualified candidates. It should not, however, be a punishment for the candidates themselves. Confusing and cumbersome assessments and paperwork can be, at best, bothersome and, at worst, expensive and frustrating. Keeping the process simple and efficient, and assessing the areas the state and the profession deem necessary are important. Variables such as score reporting, cost, and accessibility ought to be considered when making decisions about two acceptable assessment instruments.

The state must now make a decision on how to proceed. Here are a few guiding questions.

- When is the most appropriate time to test for basic skills competency: early in one's academic years or later?
- How will minimum scores (floors) for each test be established, and which group(s) will make those determinations?
- How and when is instructional competence assessed in relation to content knowledge?
- Should professional associations play a more dominant role in the assessment process like they do in the certification and licensure of professionals in law, accounting, medicine, and others?
- What role, if any, should state and national teacher education accrediting bodies play in the assessment process?